

CMSC 250 - Homework 8 - Summer 2006

Due Fri July 28th at the beginning of your discussion section.

You must write the solutions to the problems single-sided on your own lined paper, with all sheets stapled together, and with all answers written in sequential order or you will lose points. Please write your solutions in pencil.

1. How many ways can 10 (identical) dimes be distributed among five children if:
 - (a) there are no restrictions?
 - (b) each child gets at least one dime?
 - (c) the oldest child gets at least two dimes?
 - (d) the oldest child gets exactly two dimes?
2. If you received 20 candies that were all exactly the same (a very boring neighborhood for trick-or-treaters), answer the following questions:
 - (a) How many ways can you select which three to give to your brother (because your mother told you to share)?
 - (b) How many ways can you eat them all quickly (one after the other) so you don't have to share any with your brother?
 - (c) How many ways can you divide them into two piles so you can give one pile to your brother and keep the other (it may be the case that one of you gets none and the other gets all)?
 - (d) Assuming your brother's two friends have come over, and now you need to divide them up into 4 piles (again where one or more of the piles could be empty) - how many ways could you divide them up?
 - (e) You decide in order to "share" the candy as your mother told you, you will give two candies to your brother, and one to each of his two friends, and then you will keep the others in the bag you trick-or-treated with. How many different ways can you distribute the candy?